FE 6138 (US)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants: **Arrigo Arletti et al.**	)	
Application Number: **10/575,751**	)	Group Art Unit: **1797**
Filed: **April 13, 2006**	)	Examiner: **Andrew Joseph Janca**
For **PROCESS FOR THE CONTINUOUS**	)	
PRODUCTION OF EMULSIONS	)	

Honorable Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Sir:

Please enter the following Brief in response to the Advisory Action mailed April 8, 2010. Appellants filed a Notice of Appeal on March 18, 2010. The Office has been authorized to charge Deposit Account No. 08-2336 for the requisite fee for this Brief.

Table of Contents

I. REAL PARTY IN INTEREST

The real party in interest is Basell Poliolefine Italia s.r.l., which is the assignee of record of the present application and which is a company organized and existing under the laws of Italy.

II. RELATED APPEALS AND INTERFERENCES

There are no other prior or pending appeals, interferences, or judicial proceedings known to Appellants, Appellants' legal representative, or the assignee which may relate to, directly affect, or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-14, 24 and 25 stand rejected and are being appealed.

IV. STATUS OF AMENDMENTS

The amendment after Final Rejection cancelling withdrawn claims 15-23 was entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

In independent claim 1, Appellants are currently claiming a multistage process for the continuous production of an emulsion, the process comprising subjecting at least two immiscible liquids to a sequence of at least two mixing stages carried out in at least two successive stator-rotor devices, each comprising at least one rotor disk and at least one stator, the at least one rotor disk having a peripheral velocity, wherein a peripheral outlet from a first stator-rotor device is connected to an axial inlet in a successive stator-rotor device by means of a duct comprising an initial portion and an end portion, in which a Reynolds number Re_T inside said duct is higher

than 5000, the initial portion of the duct being oriented in a direction substantially tangential to the circumference of the rotor; and the peripheral velocity of each rotor of said stator-rotor devices ranging from 5 to 60 m/s. (Appl., p. 4, lines 4-11)

Claim 2 depends upon claim 1 and further specifies that the emulsion comprises, as a dispersed phase, a molten adduct of magnesium dihalide-Lewis base. (Appl., p. 4, lines 25-27)

Claim 3 depends upon claim 2 and further specifies that the emulsion comprises, as a continuous phase, a liquid which is inert and immiscible with said molten adduct of magnesium dihalide-Lewis base. (Appl., p. 4, lines 27-28)

Claims 4 and 5 depend upon claim 3, with claim 4 further specifying that the inert and immiscible liquid is selected from aliphatic and aromatic hydrocarbons, silicone oils, liquid polymers or mixtures of said compounds; (Appl., p. 4, lines 29-30) and claim 5 further specifying that the molten adduct of magnesium dihalide-Lewis base is fed to said first stator-rotor device at a weight ratio of less than 0.5 with respect to said inert and immiscible liquid. (Appl., p. 4, line 33 to page 5, line 1)

Claims 6, 7, 8, and 9 depend upon claim 1, with claim 6 further specifying that in each mixing stage a residence time is of less than 1 second; (Appl., p. 5, line 9), claim 7 further specifying that the peripheral velocity of the at least one rotor disk is comprised in the range from 20 to 60 m/sec; (Appl., p. 5, line 8), claim 8 further specifying that the Reynolds number Re_T inside said duct is higher than 8000; (Appl., p. 5, line 7), and claim 9 further specifying a sequence of three mixing stages. (Appl., p. 6, lines 34-35)

Claims 10 and 11 depend upon claim 2, with claim 10 further specifying that the magnesium dihalide is magnesium chloride; (Appl., p. 7, lines 1-2), and claim 11 further specifying that the Lewis base is selected from amines, alcohols, esters, phenols, ethers,

polyethers, aromatic or aliphatic (poly)carboxylic acids. (Appl., p. 7, lines 2-4)

Claim 12 depends upon claim 11, and further specifies that the Lewis base is an alcohol of formula ROH, in which R is an alkyl group containing from 1 to 10 carbon atoms. (Appl., p. 7, lines 2-6).

Claim 13 depends upon claim 2 and further specifies that the molten adduct is $MgCl_2 \cdot mROH \cdot nH_2O$, wherein m=0.1-6.0, n=0-0.7 and R= alkyl group C_1-C_{10}. (Appl., p. 7, lines 4-8)

Claim 14 depends upon claim 13 and further specifies that m=2.0-4.0, n=0-0.4 and R= ethyl group. (Appl., p. 7, lines 9-10)

Claims 15 to 23 are canceled.

Claims 24 and 25 depend upon claim 1, with claim 24 further specifying that the end portion of the duct is oriented in a direction substantially parallel to the rotation axes of each rotor; (Appl., p. 7, lines 14-17), and claim 25 further specifying that the rotation of the rotor forces the emulsion to flow from the rotor axis towards the peripheral rim of the rotor. (Appl., p. 5, lines 13-17)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL.

(A) Whether claims 1-5, 7-14, and 24-25 are unpatentable under 35 U.S.C. §103(a) over U.S. Patent Publication No. 2003/0096699 of Arletti et al. ("Arletti") in view of U.S. Patent No. 2,461,276 of Hetherington ("Hetherington") and U.S. Patent No. 1,489,786 of Povey et al. ("Povey").

(B) Whether claims 1-5, 7-14, and 24-25 are unpatentable under 35 U.S.C. §103(a) over Povey in view of Arletti.

(C) Whether claim 6 is unpatentable under 35 U.S.C. §103(a) over Arletti in view of Hetherington, Povey, and U.S. Patent No. 4,089,835 of Konig et al. ("Konig").

(D) Whether claim 6 is unpatentable under 35 U.S.C. §103(a) over Povey in view of Arletti and Konig.

VII. ARGUMENT

(A) Claims 1-5, 7-14, and 24-25 are patentable under 35 U.S.C. §103(a) over U.S. Patent Publication No. 2003/0096699 of Arletti et al. ("Arletti") in view of U.S. Patent No. 2,461,276 of Hetherington ("Hetherington") and U.S. Patent No. 1,489,786 of Povey et al. ("Povey").

Appellants respectfully submit that a prima facie case of Obviousness has not been made out by the Examiner.

Combination Of References Does Not Teach All The Elements of Claims

Arletti do not teach, suggest or disclose the current claims. First, Arletti's process is not a multistage process for the continuous production of an emulsion, the process comprising subjecting at least two immiscible liquids to a sequence of at least two mixing stages carried out in at least two successive stator-rotor devices each comprising at least one rotor disk and one stator. At most, Arletti teach a first step consisting of a single emulsion-forming step and a second cooling/solidification step where droplets of Mg dihalide are solidified (paragraphs [0016] to [0018]). The cooling/solidification is important to obtaining particles with the appropriate morphology and size distribution. (paragraph [0015]) Moreover, contrary to the Examiner's contention, vessel 1 along with its stirrer 4 and cooling bath 15 along with tubular zone 20 are not rotor-stator devices. Vessel 1 is simply a stirred tank and has no stator at all. The fact that a

vessel is equipped with a stirrer, and happens to have internal piping does not qualify the combination as a rotor-stator device, as in the present claims. Similarly, cooling bath 15 is simply a stirred tank with a draft tube. The fact that it has a stirrer 16 and a tubular zone 20 does not qualify the combination as a rotor-stator device, as in the present claims. The Examiner has pointed to paragraph [0035] as allegedly being proof of Areletti teaching a rotor-stator device, however, Arletti's discussion of a rotor-stator device is completely generic, and in any event, refers only to step (a) in vessel 1, not vessel 15.

Second, Arletti do not disclose a peripheral outlet from a first stator-rotor device connected to an axial inlet in a successive stator-rotor device. Even assuming that turbulent zone 20 constitutes a stator as part of a rotor-stator device as claimed, which it does not, Arletti do not teach introducing the emulsion into an axial inlet. Introduction is clearly shown at a midpoint of the turbulent zone 20.

Third, Arletti do not disclose an initial portion of a duct being oriented in a direction substantially tangential to the circumference of the rotor. As discussed above, vessel 1 does not disclose a stator at all, much less a rotor-stator device. Further, pipe 14 does not convey the emulsion to a rotor-stator device, but to a cooling bath performing a cooling/solidification step. Finally, Arletti do not teach, suggest or disclose that the duct is oriented in a direction substantially tangential to the circumference of the rotor.

With respect to Hetherington and Povey, they do not cure the deficiencies of Arletti. Hetherington relates to a continuous process of manufacturing lubricating greases. Povey relates to a machine for disintegrating solid material in the presence of a liquid and for the emulsification or admixture of liquids. Contrary to the Examiner's assertions, neither

Hetherington nor Povey teach, suggest or disclose an initial portion of the duct being oriented in a direction substantially tangential to the circumference of the rotor.

Arletti/Povey teach away from their combination

Povey actually teaches away from combination with Arletti since it discloses a device that disintegrates solid materials (page 2, right column, lines 103-110), while Arletti is specifically designed to solidify materials out of solution in a carefully designed way so as to affect the solids morphology and particle size distribution. It is well settled that there is no suggestion or motivation to make a proposed modification if the modification would render the prior art invention being modified unsatisfactory for its intended purpose. *In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)* There would thus be no reasonable expectation of success in modifying the references as proposed by the Examiner, and the rationale of the Examiner does not represent the standard of Obviousness for the Federal Circuit since it "does not present a finite (and small in the context of the art) number of options easily traversed to show obviousness." *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Laboratories, Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008).

(B) Claims 1-5, 7-14, and 25-26 are patentable under 35 U.S.C. §103(a) over Povey in view of Arletti.

Appellants respectfully submit that a prima facie case of Obviousness has not been made out by the Examiner.

First, as acknowledged by the Examiner, Povey do not teach a second stator-rotor device, or a Reynolds number inside the duct of higher than 5000. However, contrary to the assertions of the Examiner, Povey also do not teach, suggest or disclose an initial portion of the duct being

oriented in a direction substantially tangential to the circumference of the rotor. To remedy the deficiencies of Povey, the Examiner has relied upon Arletti. However, Arletti's process is not a multistage process for the continuous production of an emulsion, the process comprising subjecting at least two immiscible liquids to a sequence of at least two mixing stages carried out in at least two successive stator-rotor devices each comprising at least one rotor disk and one stator. At most, Arletti teach a first step consisting of a single emulsion-forming step and a second cooling/solidification step where droplets of Mg dihalide are solidified (paragraphs [0016] to [0018]). The cooling/solidification is important to obtaining particles with the appropriate morphology and size distribution. (paragraph [0015]) Moreover, contrary to the Examiner's contention, vessel 1 along with its stirrer 4 and cooling bath 15 along with tubular zone 20 are not rotor-stator devices, as in the recited claims. Vessel 1 is simply a stirred tank and has no stator at all. The fact that a vessel is equipped with a stirrer, and happens to have internal piping does not qualify the combination as a rotor-stator device, as in the present claims. Similarly, cooling bath 15 is simply a stirred tank with a draft tube. The fact that the cooling bath has a stirrer 16 and a tubular zone 20 does not qualify the combination as a rotor-stator device, as in the present claims. The Examiner has pointed to paragraph [0035] as allegedly being proof of Arletti teaching a rotor-stator device, however, Arletti's discussion of a rotor-stator device is completely generic, and in any event, refers only to step (a) in vessel 1, not vessel 15.

Moreover, Arletti do not disclose a peripheral outlet from a first stator-rotor device connected to an axial inlet in a successive stator-rotor device. Even assuming that turbulent zone 20 constitutes a stator as part of a rotor-stator device as claimed, which it does not, Arletti do not teach introducing the emulsion into an axial inlet. Introduction is clearly shown at a midpoint of the turbulent zone 20.

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The Examiner's combination of Povey and Arletti is flawed because Povey actually teaches away from combination with Arletti. Povey discloses a device that disintegrates solid materials (page 2, right column, lines 103-110), while Arletti is specifically designed to solidify materials out of solution in a carefully designed way so as to affect the solids morphology and particle size distribution. It is well settled that there is no suggestion or motivation to make a proposed modification if the modification would render the prior art invention being modified unsatisfactory for its intended purpose. *In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)* There would thus be no reasonable expectation of success in modifying the reference as proposed by the Examiner, and the rationale of the Examiner does not represent the standard of Obviousness for the Federal Circuit since it "does not present a finite (and small in the context of the art) number of options easily traversed to show obviousness." *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Laboratories, Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008).

(C) Claim 6 is patentable under 35 U.S.C. §103(a) over Arletti in view of Hetherington, Povey, and U.S. Patent No. 4,089,835 of Konig et al. ("Konig").

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invention being modified unsatisfactory for its intended purpose. *In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)*

Konig doesn't remedy the deficiencies of Arletti, Povey, and Hetherington

First, Konig does not remedy the deficiencies of Arletti, Povey and Hetherington, as discussed above. Second, claim six recites a residence time of less than one second. In contrast, Konig teaches residence times of about 1 second up to 10 minutes. Konig teaches as a preferred embodiment residence times of 2 seconds to 3 minutes (col. 10, lines 38-40). Therefore, the lower limit of the preferred residence time range in Konig is over twice that of the upper limit in the recited claim, with the upper limit of the preferred residence time range being over 600 times that of the upper limit of the claimed residence time. Thus, Konig does not teach the claimed range of less than one second recited in claim 6 for the residence time. The ranges are not the same, and are in fact different There would thus be no reasonable expectation of success in modifying the references as proposed by the Examiner, and the rationale of the Examiner does not represent the standard of Obviousness for the Federal Circuit since it "does not present a finite (and small in the context of the art) number of options easily traversed to show obviousness." *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Laboratories, Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008).

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the art) number of options easily traversed to show obviousness." *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Laboratories, Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008).

VIII. CONCLUSION

Appellants respectfully ask the Board of Appeals and Interferences to reconsider and reverse the Section 103(a) rejections because a prima facie case of obviousness has not been made out.

Respectfully submitted,

Arrigo Arletti et al.

By: _____

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I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office (Fax. No. 571-273-8300) on May 18, 2010.

_____
Signature

May 18 2010
Date

IX. CLAIMS APPENDIX

1. (rejected) A multistage process for the continuous production of an emulsion, the process comprising subjecting at least two immiscible liquids to a sequence of at least two mixing stages carried out in at least two successive stator-rotor devices each comprising at least one rotor disk and at least one stator, the at least one rotor disk having a peripheral velocity, wherein:
   - a peripheral outlet from a first stator-rotor device is connected to an axial inlet in a successive stator-rotor device by means of a duct comprising an initial portion and an end portion, in which a Reynolds number Re_T inside said duct is higher than 5000, the initial portion of the duct being oriented in a direction substantially tangential to the circumference of the rotor; and
   - the peripheral velocity of each rotor of said stator-rotor devices ranges from 5 to 60 m/s.
2. (rejected) The process according to claim 1, wherein said emulsion comprises, as a dispersed phase, a molten adduct of magnesium dihalide-Lewis base.
3. (rejected) The process according to claim 2, wherein said emulsion comprises, as a continuous phase, a liquid which is inert and immiscible with said molten adduct of magnesium dihalide-Lewis base.
4. (rejected) The process according to claim 3, wherein said inert and immiscible liquid is selected from aliphatic and aromatic hydrocarbons, silicone oils, liquid polymers or mixtures of said compounds.
5. (rejected) The process according to claim 3, wherein said molten adduct of magnesium dihalide-Lewis base is fed to said first stator-rotor device at a weight ratio of less than 0.5

with respect to said inert and immiscible liquid.

6. (rejected) The process according to claim 1, wherein in each mixing stage a residence time is of less than 1 second.

7. (rejected) The process according to claim 1, wherein the peripheral velocity of the at least one rotor disk is comprised in the range from 20 to 60 m/sec.

8. (rejected) The process according to claim 1, wherein the Reynolds number Re_T inside said duct is higher than 8000.

9. (rejected) The process according to claim 1 comprising a sequence of three mixing stages.

10. (rejected) The process according to claim 2, wherein said magnesium dihalide is magnesium chloride.

11. (rejected) The process according to claim 2, wherein said Lewis base is selected from amines, alcohols, esters, phenols, ethers, polyethers, aromatic or aliphatic (poly)carboxylic acids.

12. (rejected) The process according to claim 11, wherein said Lewis base is an alcohol of formula ROH, in which R is an alkyl group containing from 1 to 10 carbon atoms.

13. (rejected) The process according to claim 2, wherein the molten adduct is $MgCl_2 \cdot mROH \cdot nH_2O$, wherein m=0.1-6.0, n=0-0.7 and R= alkyl group C_1-C_{10}.

14. (rejected) The process according to claim 13, wherein m=2.0-4.0, n=0-0.4 and R= ethyl group.

Claims 15-23 (canceled)

24. (rejected) The process according to claim 1, wherein the end portion of the duct is oriented in a direction substantially parallel to the rotation axes of each rotor.

25. (rejected) The process of claim 1 wherein rotation of the rotor forces the emulsion to flow from the rotor axis towards the peripheral rim of the rotor.

X. EVIDENCE APPENDIX

Not applicable.

XI. RELATED PROCEEDINGS APPENDIX

Not applicable.